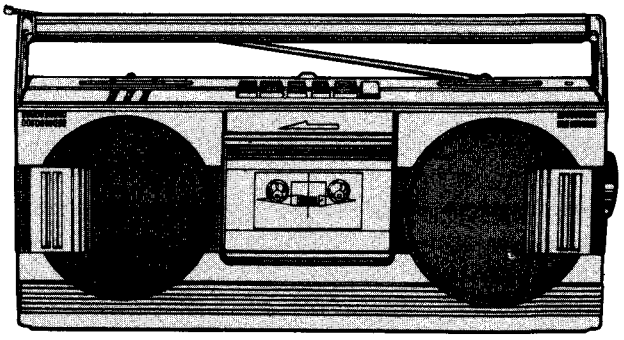
GoldStar

AM/FM STEREO CASSETTE RECORDER

SERVICE MANUAL

CAUTION

BEFORE SERVICING THE CHASSIS, READ THE "SAFETY PRECAUTIONS", IN THIS MANUAL



MODEL: TC-F31

GoldStar

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SAFETY PRECAUTION

Many electrical and mechanical parts in this chassis have special safety-related features, which cannot necessarily be assured by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety features are identified in this manual, by a ⚠ in the schematic diagram and the parts list. Before replacing any of these components, read the parts list manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

SPECIFICATIONS

• General

Circuit system	4 track 2 channel strereo
Speaker	3.5 inches, 4 ohm X2
Power supply	DC : 6V ("D" Cell X4)
	AC : 120V, 60Hz
Antenna	FM : Rod antenna
	AM : Ferrite bar antenna

• AM

Frequency range	515 ~ 1630 KHz
Intermediate frequency	455 KHz
Usable sensitivity	54dB (600KHz), 50dB (1000Hz)
S/N ratio	40dB
Maximum power output	1000 mW
T.H.D.	3% (400Hz 30% Mod)
Frequency response	125 ~ 2000Hz (–6dB point)

• FM

Frequency range	87.35 ~ 108.25 MHz
Intermediate Frequency	10.7 MHz
Usable sensitivity	18dB
S/N ratio	50dB
Maximum Power Output	1000mV
T.H.D.	3% (60dB input)
Frequency response	0 ± 6dB

• Cassette

Tape Speed	± 3dB
Wow & flutter	0.35%
Frequency response	PB : ± 6dB
	REC/PB : ± 6dB
Distortion	PB : 4%
	REC/PB : 10%
10% T.H.D. Output	800mW
S/N ratio	PB : 35dB
	REC/PB : 25dB

DIAL CORD STRINGING

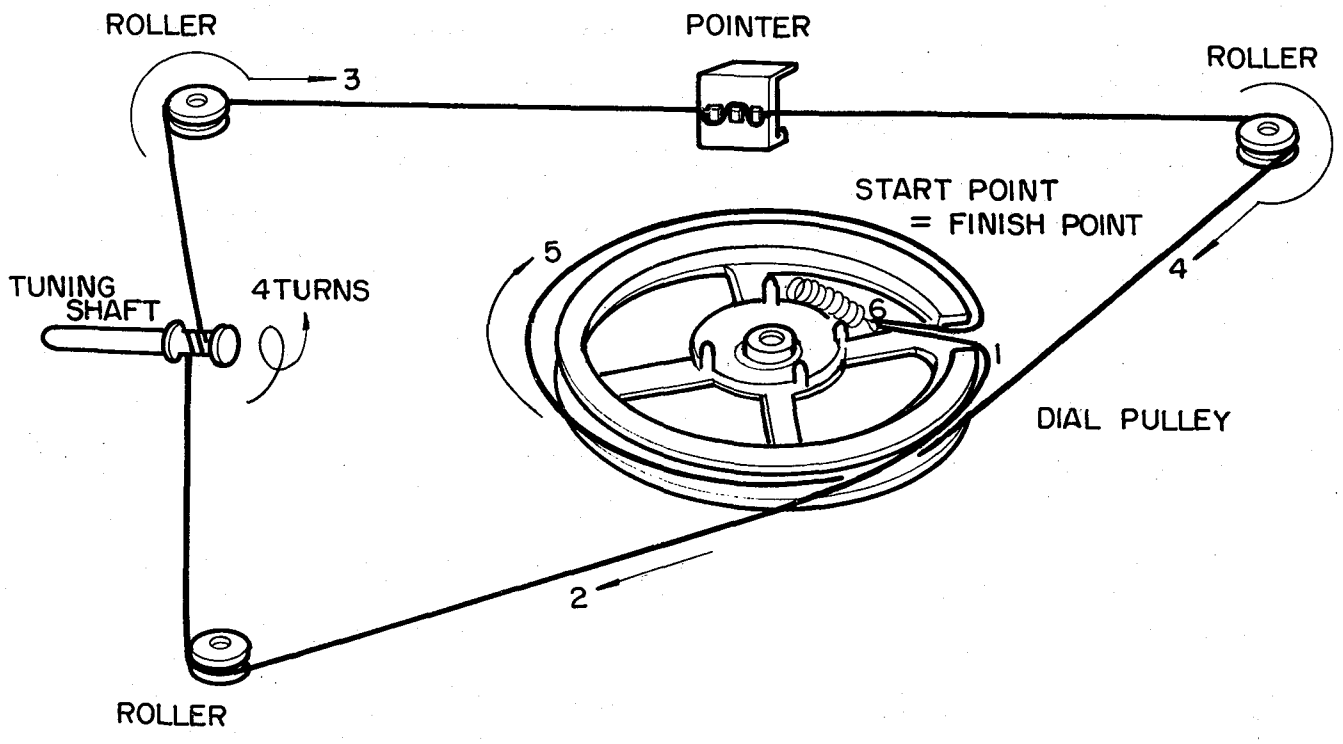


Figure 1.

Set the tuning cupacitor to minimum frequency and string the cord following the numbers in figure 1.

ADJUSTMENT

Equipment Needed

1. AM Signal Generator
2. FM Signal Generator
3. IF Sweep Generator with marker capabilities
4. FM Stereo Signal Generator
5. Oscilloscope
6. Output Meter (VTVM)
7. Frequency Counter
8. Nonmetallic Alignment Tools

Important

1. Check power source voltage.
2. Set the function switch to band being aligned.
3. Turn volume control to minimum unless otherwise noted.
4. Connect low side of signal source and output indicator to chassis ground unless otherwise specified.
5. Keep the signal input as low as possible to avoid AGC and AFC action.
6. Standard modulation is 400 Hz at 30% modulation for AM. (1 kHz at 22.5 KHz deviation for FM)

Test and adjustment points

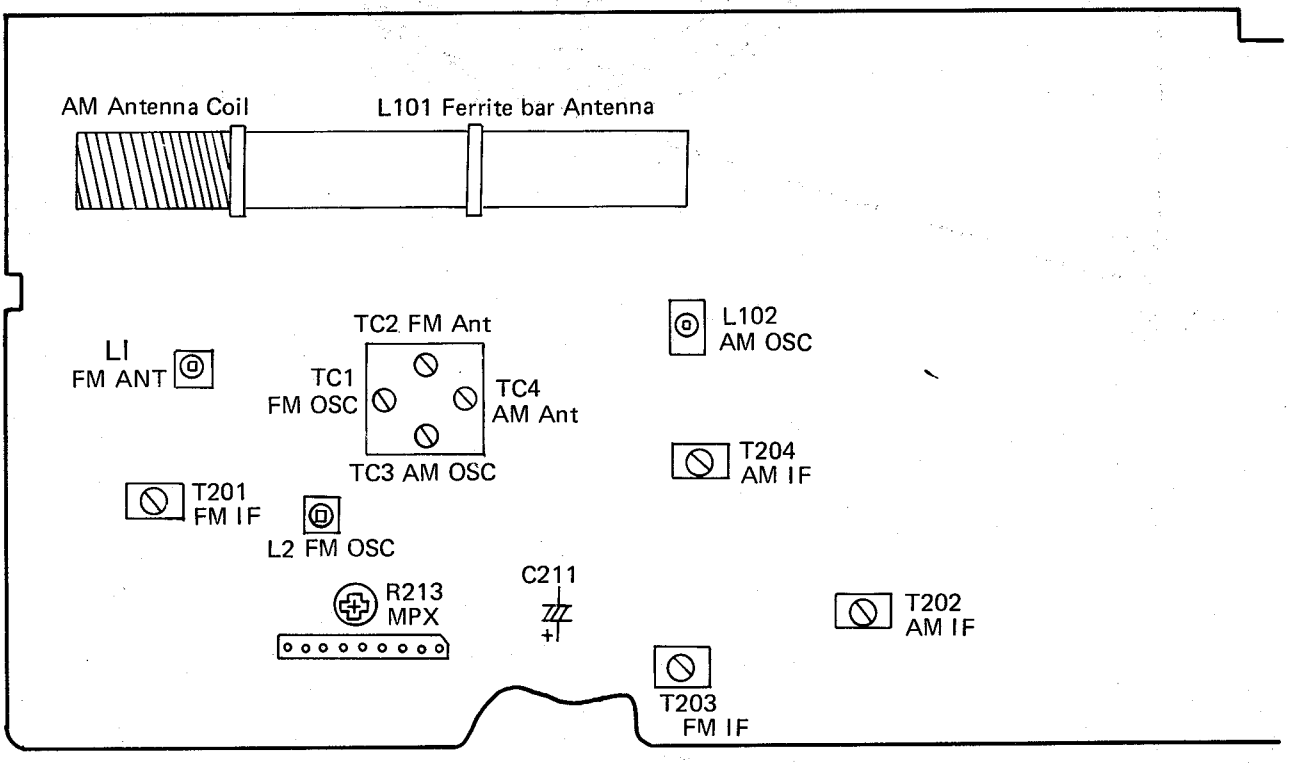


Figure 2. P.C. BOARD

AM Section

Circuit Alignment	Equipment Connection	Step	Generator Frequency	Dial Setting	Adjustment
IF	Connect input of IF Genescope to C211(+), output to AM antenna coil through the dummy. (Figure 3)	1	455 KHz (400 Hz Mod.)	Tuning Gang fully closed	T202, T204 (AM IFT), Adjust for maximum output
		2			Repeat until no further improvement can be made.
Band	AM Signal Generator with loop antenna. Output Meter (VTVM) across 4 ohm load. (Figure 4)	3	51.5 kHz (400 Hz Mod.)	Tuning Gang fully closed	L102 (AM OSC. Coil). Adjust for maximum output.
		4	1630 kHz (400 Hz Mod.)	Tuning Gang fully open	TC3 (AM OSC, Trimmer). Adjust for maximum output.
		5			Repeat steps 3 & 4.
Tracking	AM Signal Generator with loop antenna. Output Meter (VTVM) across 4 ohm load (Figure 4)	6	600 kHz (400 Hz Mod.)	Tune to signal	L101 (AM Ant. Coil). Adjust coil on ferrite core for maximum output
		7	1400 kHz (400 Hz Mod.)	Tune to signal	TC4 (AM Ant. Trimmer) Adjust for maximum output
		8			Repeat steps 6 & 7 several times.

FM Section

Circuit Alignment	Equipment Connection	Step	Generator Frequency	Dial Setting	Adjustment
IF	Connect input of IF Genescope to C211(+), output to the body of IC1 through the dummy. (Figure 5)	1	10.7 MHz	Tuning Gang fully closed	T201, T203 (FM IFT). Adjust for maximum symmetrical response (10.7 MHz at the center point)
		2			Repeat step 1
Band	FM Signal Generator to antenna terminals through 75 ohm antenna matching network. Output Meter (VTVM) across 4 ohm load. (Figure 6)	3	87.35 MHz (400 Hz Mod.)	Tuning Gang fully closed	L2 (FM OSC. Coil). Adjust for maximum output
		4	108.25 MHz (400 Hz Mod.)	Tuning Gang fully open	TC1 (FM OSC. Trimmer). Adjust for maximum output.
		5			Repeat steps 3 & 4 several times.
Tracking	FM Signal Generator to antenna terminals through 75 ohm antenna matching network. Output Meter (VTVM) across 4 ohm load. (Figure 6)	6	90 MHz (400 Hz Mod.)	Tune to signal	L1 (FM Ant. Coil) Adjust for maximum output.
		7	106 MHz (400 Hz Mod.)	Tune to signal	TC2 (FM Ant Trimmer). Adjust for maximum output.
		8			Repeat steps 6 & 7 to obtain suitable sensitivity at 90 MHz and 106 MHz.

FM MPX

Circuit Alignment	Equipment Connection	Step	Generator Frequency	Dial Setting	Adjustment
38 ± 0.1 kHz	FM Signal Generator composite out connected to Ext. Mod of FM Signal Generator. FM Signal Generator to antenna terminals matching 75 ohm antenna matching network. Frequency Counter across (pin No. 6 of IC3) (Figure 7)	1			First make sure FM section properly aligned.
		2	98 MHz (1 mV output)	98 MHz	Adjust R213 for Frequency Counter indicates 38 ± 0.1 kHz.

TEST EQUIPMENT CONNECTIONS

Figure 3. AM IF

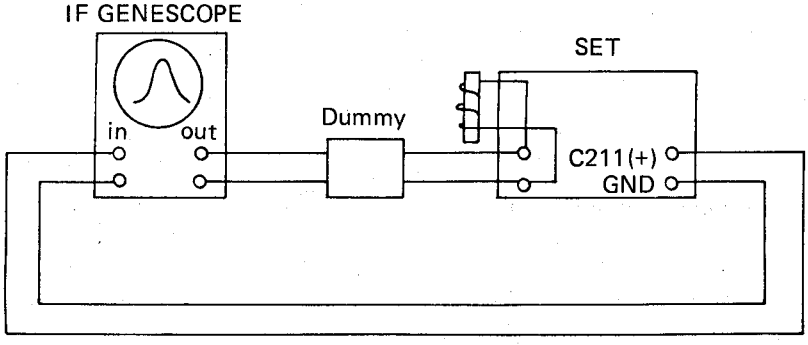


Figure 4. AM Band/Tracking

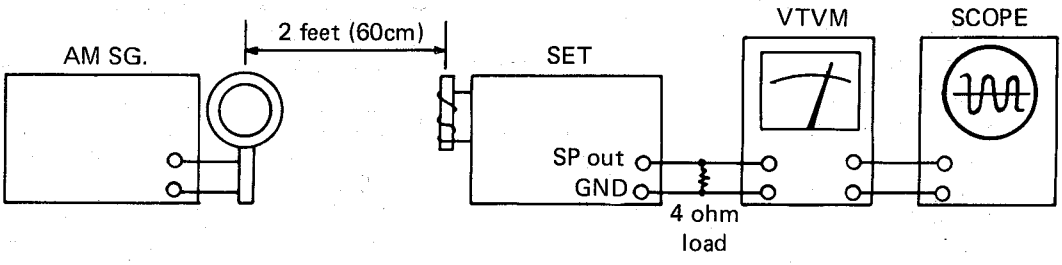


Figure 5. FM IF

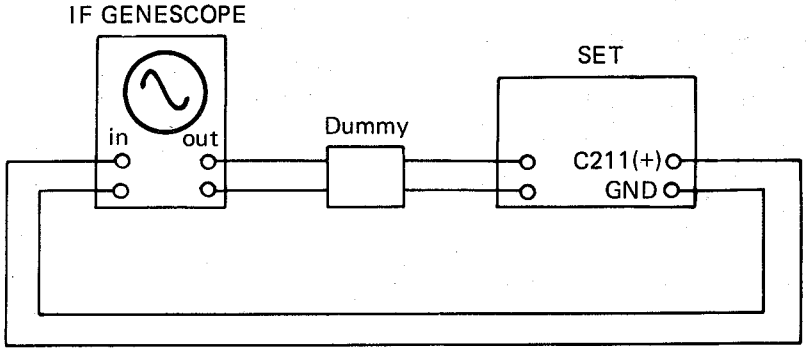


Figure 6. FM Band/Tracking

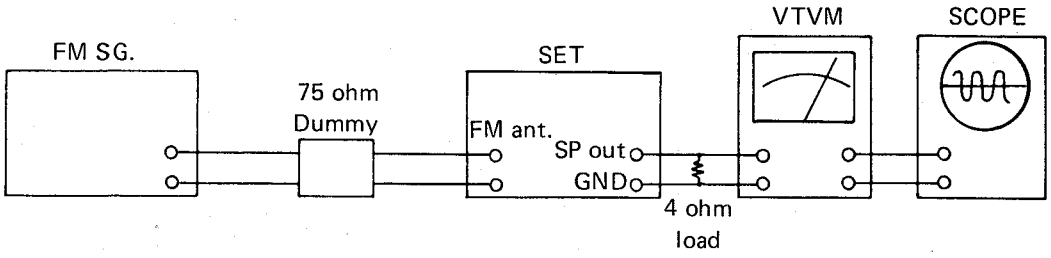
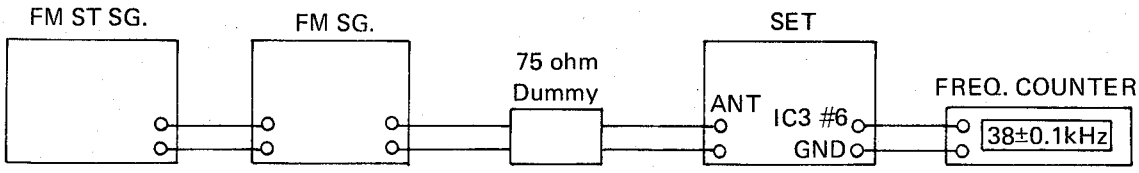


Figure 7. 38 ± 0.1 kHz Pilot



STANDARD MAINTENANCE

Tape Head and Capstan Cleaning

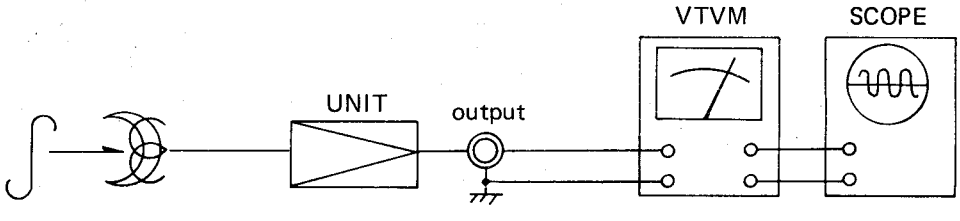
Whenever a unit is brought in for service or repair, clean the tape heads, capstan drive shaft and all other to touching the tape ensure proper tape run and optimumsfrequency response. Use a cotton swab dipped in head cleaner or denatured alcohol. Wipe dry.

Tape Head Demagnetization

Do not use magnetized tools near the tape heads, since they can magnetize the heads. After long period of use, the heads will retain a small amount of residual magnetism. A magnetized head will result in loss of high frequency response and increased noise. Use a standard tape head deamagnetizer and follow the instructions supplied wihth it to demagnetize the heads.

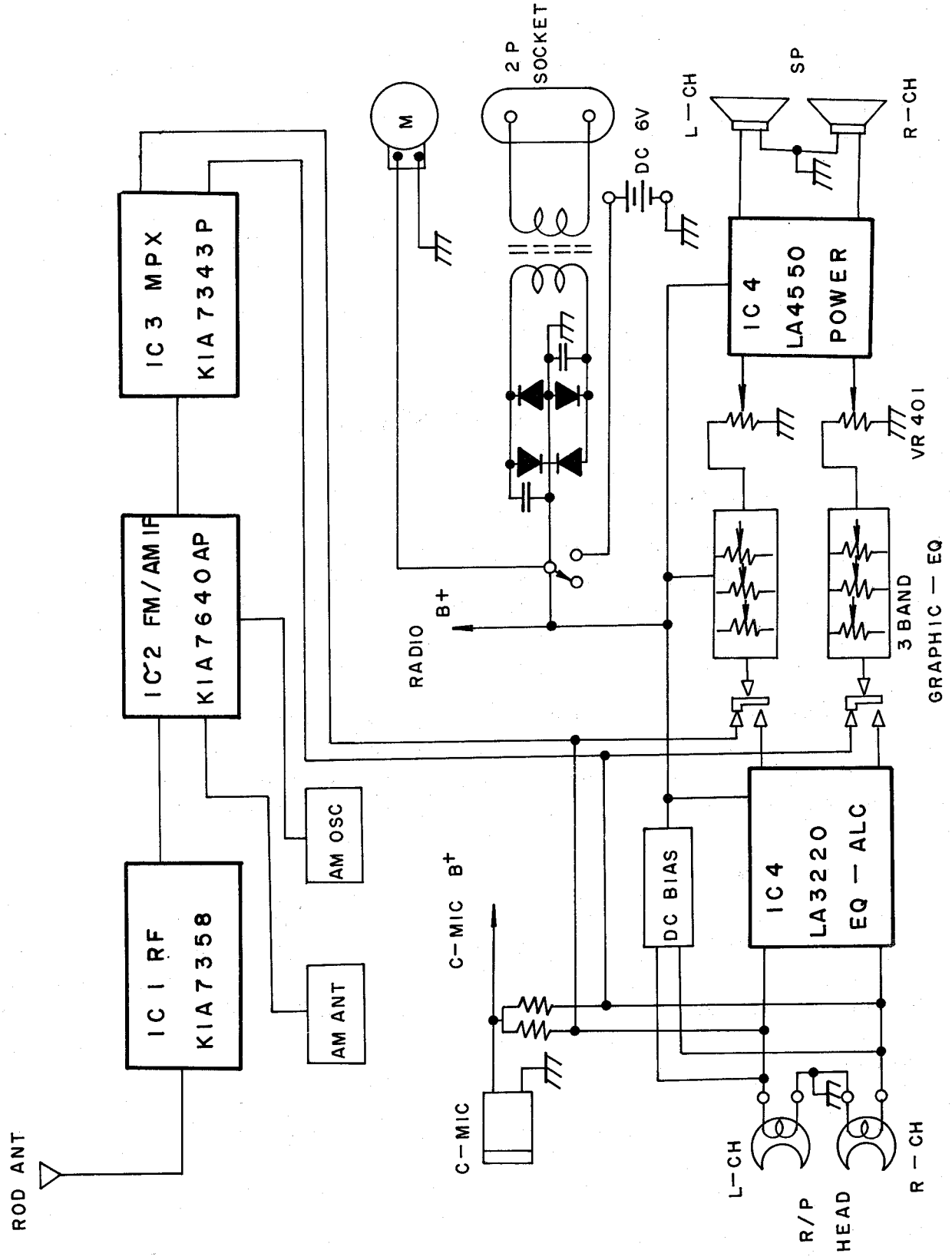
Azimuth Adjustment

1. Azimuth adjustment is normally only required when the head is replaced, or for cases of cross-talk and poor high frequency response. A test tape is required for such adjustment.
2. Connect a scope or VTVM to the right channel output. Insert a test tape into the unit (Use a test tape such as TEAC MTT-114, MTT-115). Adjust the azimuth adjustment screw for maximum output onto the right channel. Use glyptal or other non-hardening cement to lock the azimuth adjustment screw.

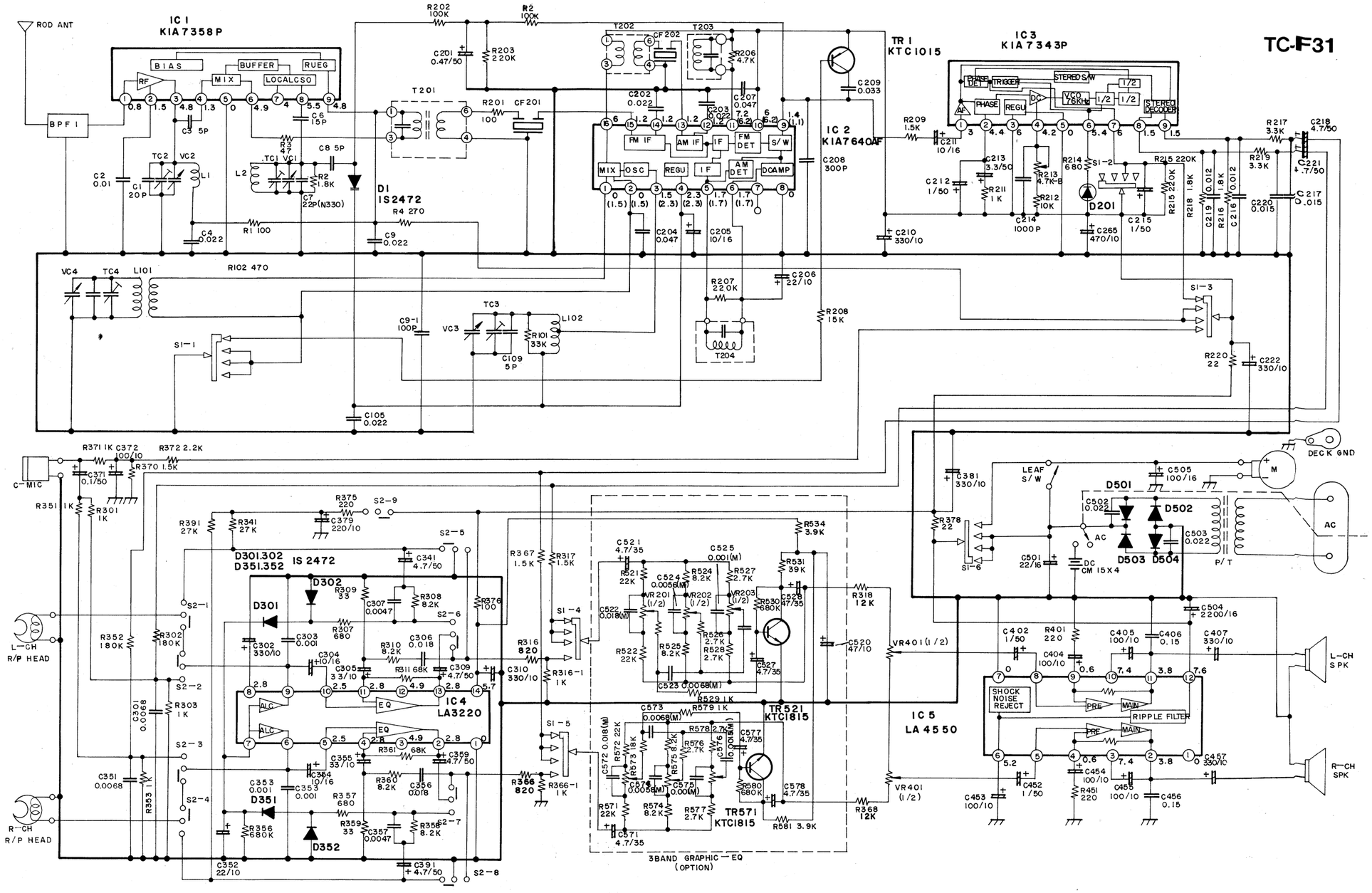


(Left channel is the same as right)

BLOCK DIAGRAM



SCHEMATIC DIAGRAM

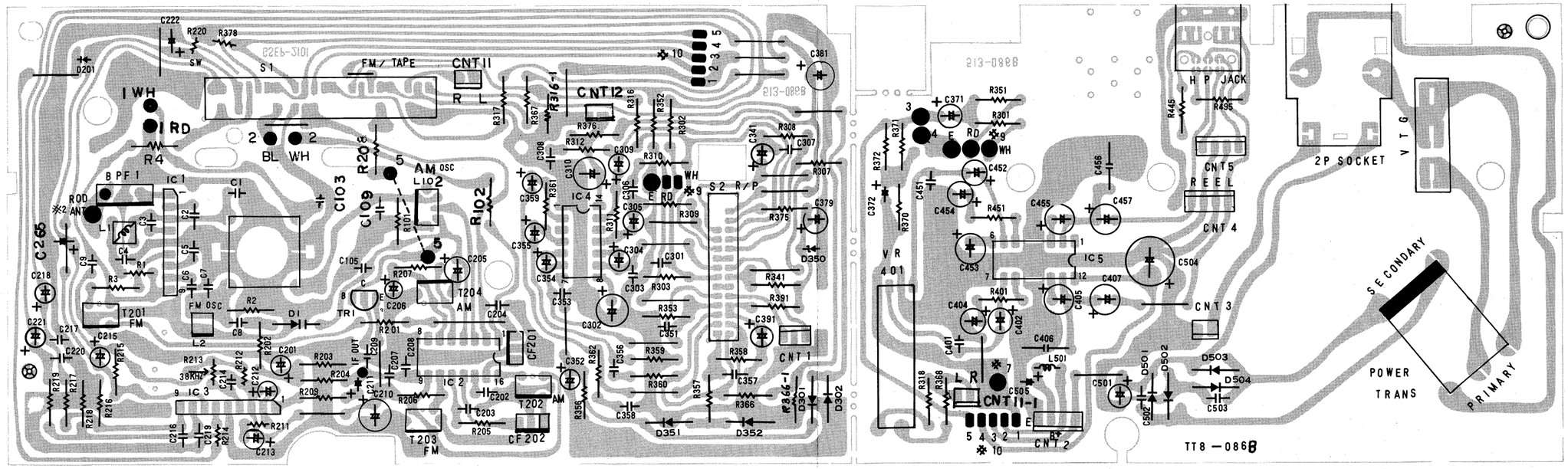


NOTES

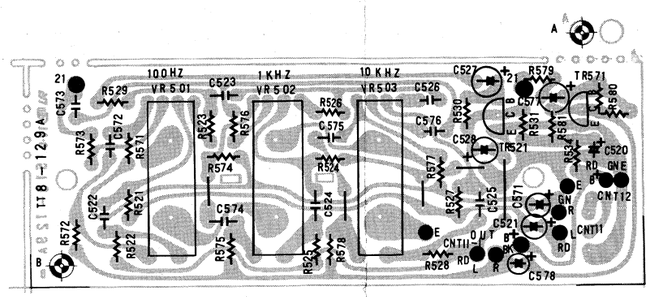
SWITCH	FUNCTION	MODE
S1-1 6	AM/ FM/ FM ST/ TAPE	AM
S2-1 9	R/ P	PLAY

PCB LAYOUT

● MAIN P.C.BOARD

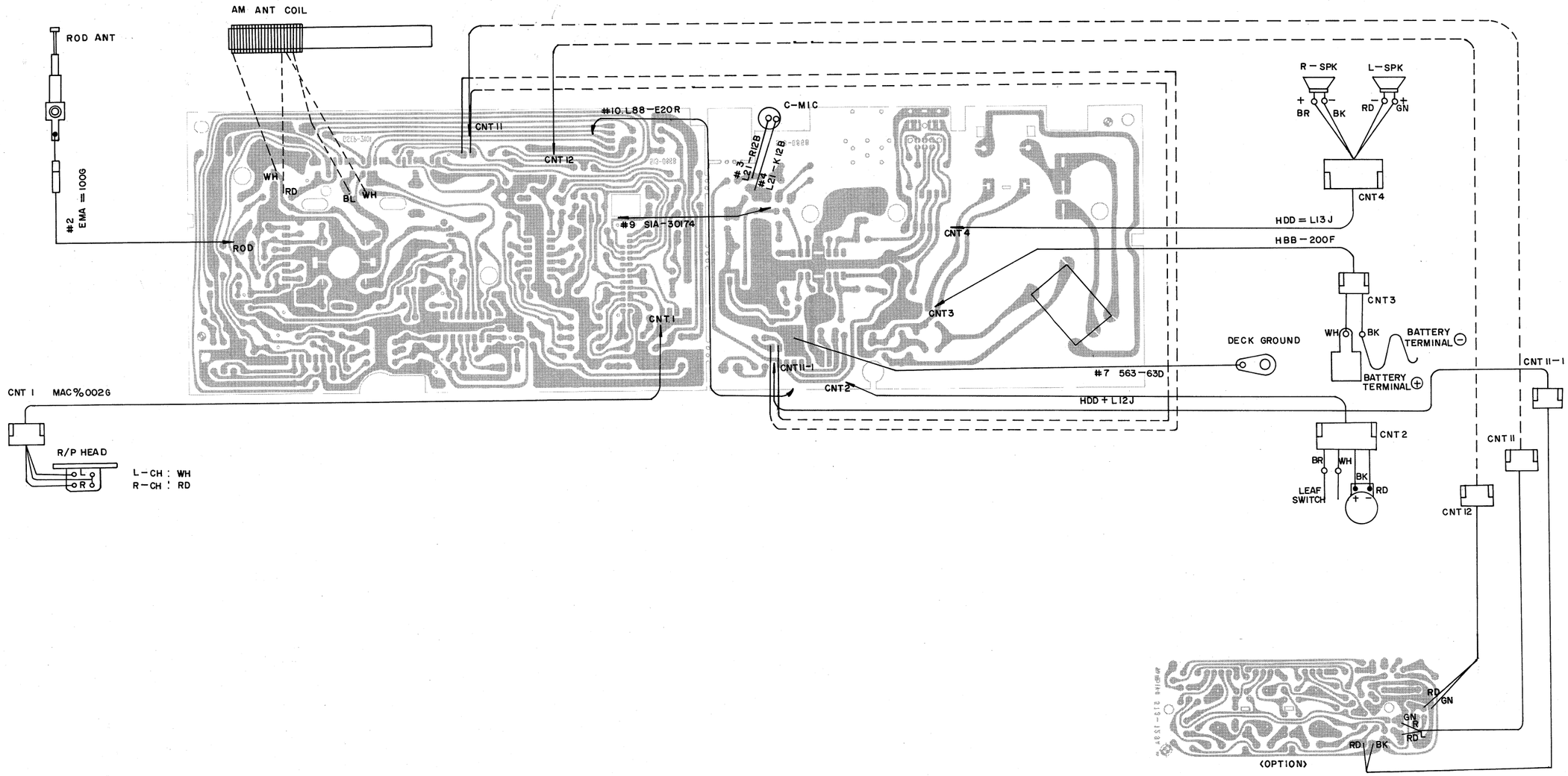


● SUB P.C.BOARD



(OPTION)

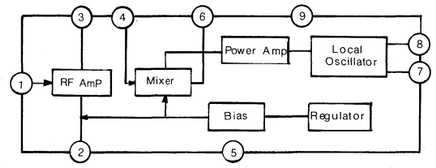
WIRING DIAGRAM



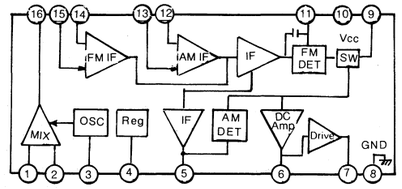
NOTES

IC INTERNAL DIAGRAM

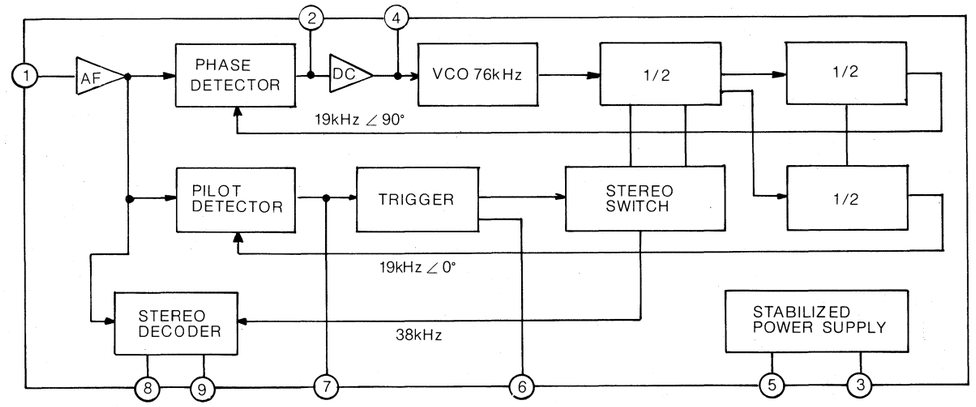
IC1 KIA7358P



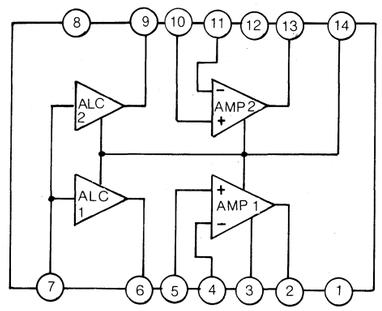
IC2 KIA7640AP



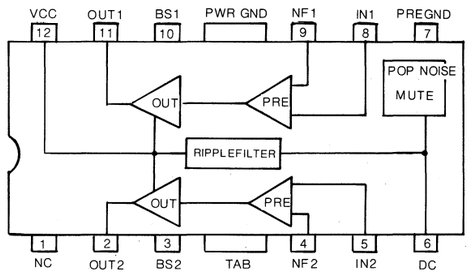
IC3 KIA7343P



IC4 LA3220

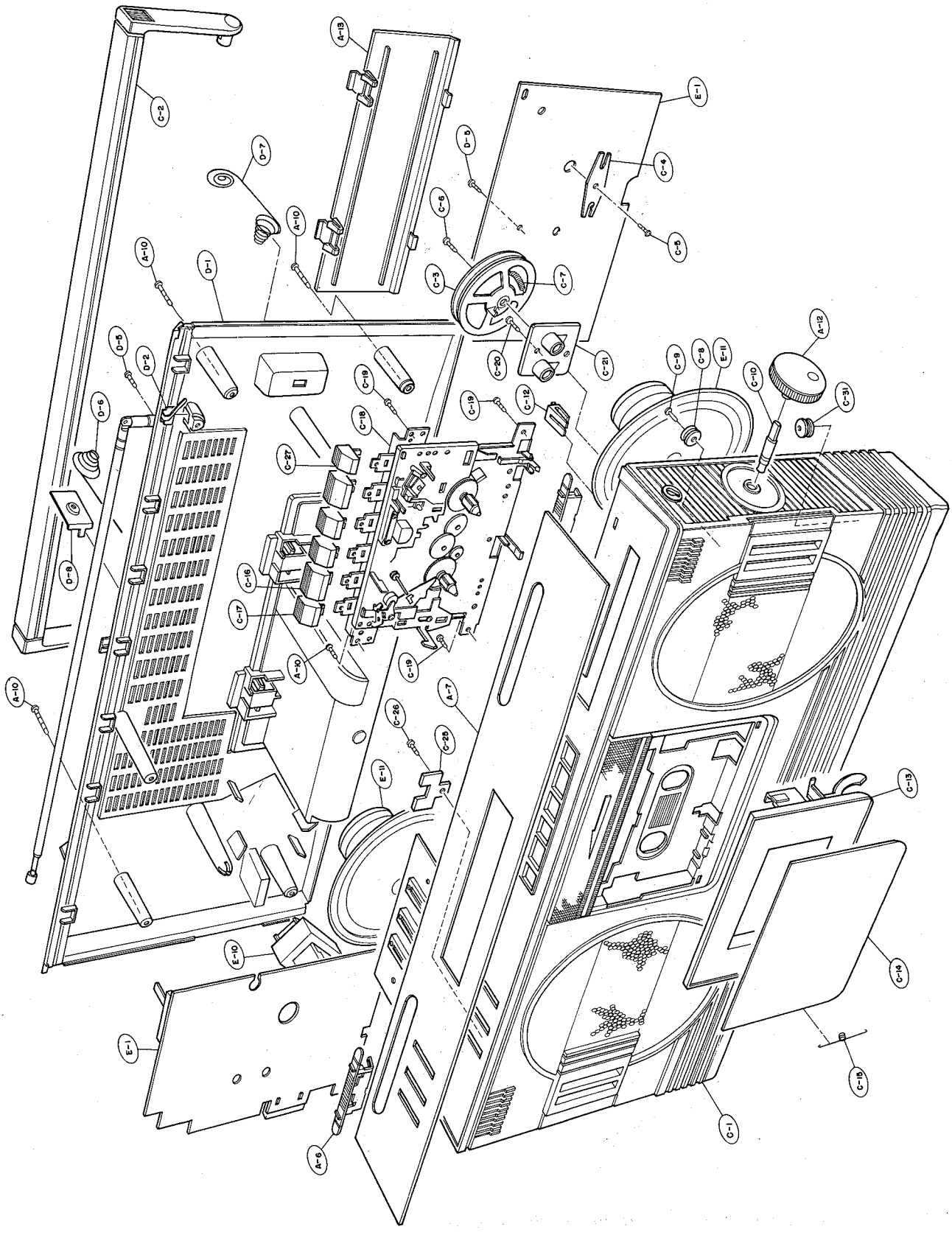


IC5 LA4550

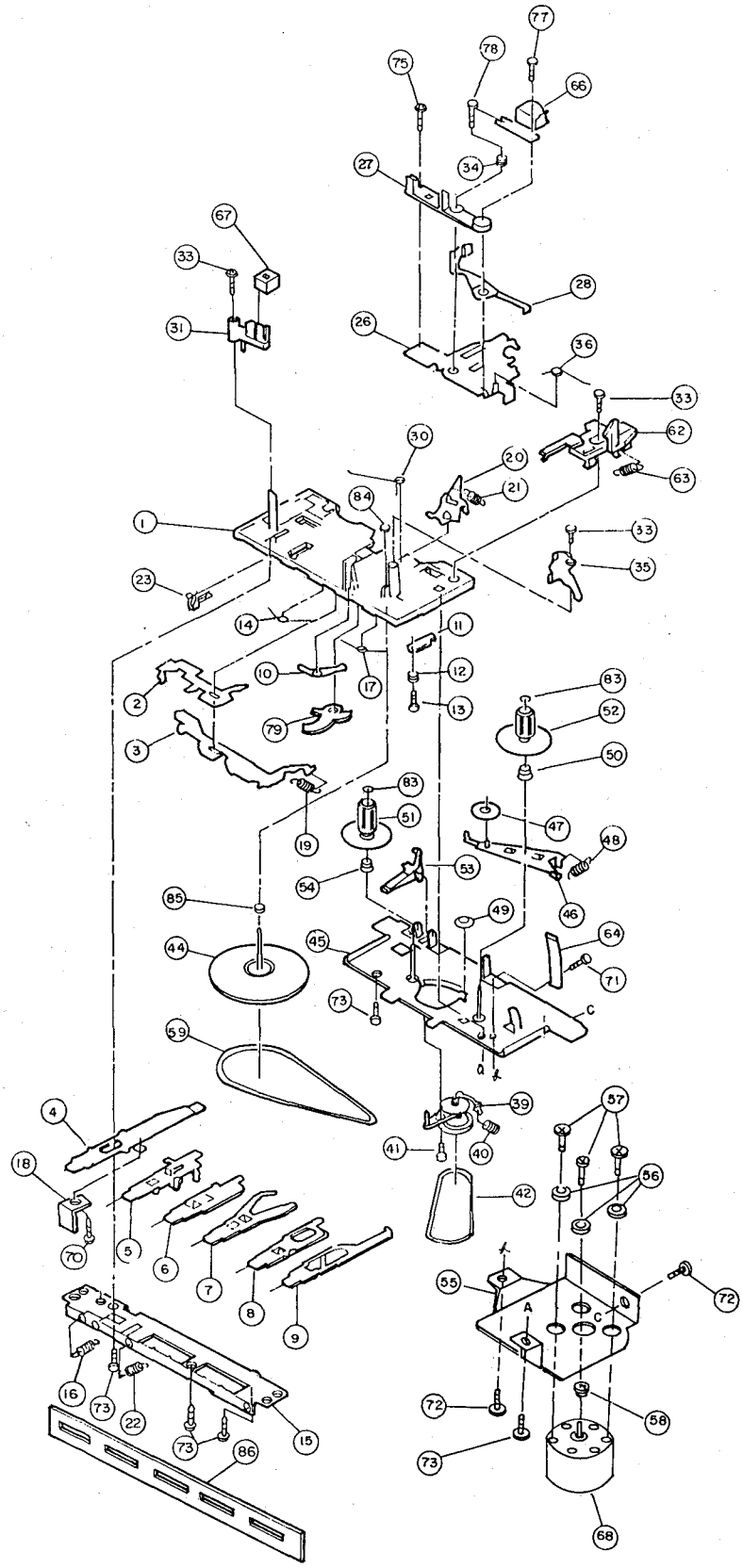


EXPLODED VIEW

- **CABINET**



• DECK MECHANISM



NOTE: Excluded parts in the part list are not available as replacement parts.

REPLACEMENT PARTS LIST

PRODUCT SAFETY NOTICE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the safety precaution of this service manual, don't degrade the safety of the receiver through improper servicing.

• ELECTRICAL

Ref. No.	Mfr's Part No.	Description
INTEGRATED CIRCUITS AND TRANSISTOR		
IC1	668-108D	IC, KIA7358P (FM FNT)
IC2	688-192A	IC, KIA7640AP (AM/FM IF)
IC3	688-159A	IC, KIA7343P (MPX)
IC4	668-163A	IC, LA3220 (Equalizer)
IC5	668-668A	IC, LA4550 (Power)
TRI	665-813C	TR, KTA1015-GR
DIODES		
D1	654-418A	AFC, 1S2236
D201	653-401A	LED, LN217RP
D301,302	652-605B	Switch, 1S2472
D351,352	652-605B	Switch, 1S2472
D501-504	652-005A	Rect, 1N4001
COILS AND TRANSFORMERS		
L1	635-009H	Coil, FM RF 3.5Turn
L2	635-020B	Coil, FM OSC
L101	632-002T	Coil, AM Antenna
L102	634-037E	Coil, AM OSC
T201	644-018F	Trans, FM IF
T202	644-039M	Trans, AM IF
T203	647-011F	Discriminator
T204	644-013F	Trans, AM IF
MISCELLANEOUS		
S1	552-627A	Switch, Slide (Tape/FM/AM)
S2	552-606E	Switch CL210J-S (R/P)
VC1-4 TC1-4	622-008M	Varicon, 2PS-22BGJT.M
CF201	616-007A	Filter, SFE10.7MA8(BL, RD, OR)
CF202	616-003D	Filter, SFU455B
BPF1	616-011G	Filter, BP. BPMB8
VR401	612-620E	VR, Slide 20KA
R213	613-001C	VR, Semi-Fired 4.7KB
	577-005A	Socket, AC-In
	542-035B	Condenser, Mic

• CABINET

Ref. No.	Mfr's Part No.	Description
A-6	273-742A	Knob, Volume
A-7	236-614H	Scale, Window
A-8	681-044A	Power Cord
A-10	353-025J	Screw, Special
A-12	271-500A	Knob, Tuning
A-13	221-863A	Cover, Battery
A-14	472-604J	Feet
C-1	217-021A	Case, Front
C-2	261-024B	Handle
C-3	431-626B	Pully, Dial
C-4	324-623A	Holder, Pulley
C-5	MPC1530J	Screw, MPC + 2.6 x 6
C-6	353-052C	Screw, Special
C-7	442-604A	Spring, M
C-8	434-001A	Wheel, Idler
C-9	423-254A	Shaft, Roller
C-10	423-625A	Shaft, Tuning
C-11	886-001D	Dial Cord
C-12	361-137A	Pointer
C-13	226-015A	Door, Cassette
C-14	221-673D	Cover, Door
C-15	442-864D	Spring, Eject
C-16	273-091C	Knob, Deck (Play)
C-17	273-092D	Knob, Deck (F.F. Rew)
C-18	419-014A	Deck Mechanism, TN21VC-552
C-19	353-025G	Screw, Special
C-20	353-025G	Screw, Special
C-21	324-033A	Holder, Pulley
C-27	273-092B	Knob, Deck
C-31	434-031A	Roller
D-1	217-002A	Case, Rear
D-2	532-207A	Antenna, Rod
D-3	254-013A	Contact, Antenna
D-5	353-025G	Screw, Special
D-6	442-924A	Spring, Conectingon
D-7	442-208B	Spring, Battery
D-8	256-334C	Terminal, Battery
E-1	513-086C	PCB Ass'y
E-9	577-005A	Socket, AC-In
⚠ E-10	641-727B	Power, Trans
E-11	541-136B	Speaker
E-14	324-001A	Holder, Antenna

●DECK MECHANISM

Ref. No.	Mfr's Part No.	Description	Ref. No.	Mfr's Part No.	Description
11	99T-0910	Pause Lever	48	99T-1017	T-G Plate Spring
12	99T-0911	Pause Lever Spring	49	99T-1117	FF Gear
13	99T-0912	Pause Stopper	51	99T-0985	S-Reel Ass'y
14	99T-0913	Button Leve Spring (E)	52	99T-0986	T-Reel Ass'y
16	99T-0915	Button Leve Spring (A)	53	99T-0945	Record Safety Lever
17	99T-0921	Button Leve Spring (C)	55	99T-1093	Motor Bracket-Vc
18	99T-1125	Record Spring Plate	58	99T-1105	Motor Pulley
22	99T-0916	Play Button Lever Spring (S)	59	99T-1074	Main Belt
23	99T-1103	Leaf Switch	62	99T-0952	Eject Slide Lever
28	99T-0924	Sensing Plate Ass'y	63	99T-0953	Eject Slide Lever Spring
31	99T-1069	MG Arm	64	99T-1096	Pack Spring
35	99T-0929	Pinch Roller-Arm Ass'y	66	99T-0956	RP-Head
36	99T-1081	Pinch Roller Spring	67	99T-1090	MAG Pole Erase Head
39	99T-0931	RF Pulley Arm Ass'y	68	99P-0165	Motor
40	99T-0932	RF Pully Arm Spring	83	99T-0967	Pole Washer Cut
42	99T-0935	RF Belt	84	99T-0968	Pole Washer Cut
44	99T-0935	Flywheel Ass'y	85	99T-0969	Pole Washer Cut
47	99T-1116	T-up Roller Gear			